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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

LEE, TOMMY D

ART UNIT PAPER NUMBER

2624

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/819,167

Applicant(s)

TULLIS, BARCLAY J.

Examiner

Thomas D. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>20020923</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: All diagrams embedded within the body of the disclosure (pages 6 and 8) should be removed.

Separate drawing figures showing such diagrams should be added if necessary.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Base claims 1 and 11 each recite the limitation, "applying metric criteria against the statistical metrics *by adjusting print density*." (italics added) This limitation implies that the action of adjusting the print density is performed in order that the application of metric criteria against the statistical metrics may be realized. However, according to the specification, the application of metric criteria is performed, and as a result of the application, print densities are adjusted (note paragraph [0018] on page 7 of applicant's specification).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-6 and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,144,566 (Anderson et al.) in view of U.S. Patent 6,771,815 (Yang et al.).

Regarding claims 1-3 and 6, Anderson et al. disclose a method of dynamically adjusting a printer, the method comprising: printing onto a medium (area of printed material scanned (column 1, lines 43-47), inherently necessitating a prior step of printing onto the material); collecting pixel values over an area of the medium (column 2, lines 31-40); calculating statistical metrics of histograms of the pixel values (column 2, line 61 – column 3, line 7); and applying metric criteria against the statistical metrics, comprising steps of determining optical density over the area and of comparing optical density to a predetermined density (column 3, lines 23-45). The printer prints with dots (ink density levels of newsprint monitored to determine the number of pixels (i.e., dots) at a particular level of ink (column 2, lines 10-13)), and the area of the medium contains “stealthy” dots (ink spots, wrinkles, holes or other localized defects (column 4, lines 1-3)).

Anderson et al. do not disclose adjusting print density in response to the applying step (reject signal or alarm indicates unsatisfactory ink density levels (column 4, lines 9-

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19)). However, such adjustment is well known in the art. Yang et al. disclose an image correction apparatus, wherein a histogram is prepared, metrics (pixel number ratio corresponding to each gradation of histogram) are determined and compared with metric criteria (pixel number ratio determined through user specification), and the histogram gradation width is corrected (read Abstract). Correction of the histogram gradation width corresponds to adjustment of print density since gradation values with pixel number ratios less than a threshold value are compressed to a single gradation (column 6, lines 13-18). By providing a correction of gradation levels, the method disclosed in Yang et al. enables a print operation to continue even when printing conditions are not optimal, whereas the method of Anderson et al. merely signals an alarm to a user. Therefore, it would have been obvious for one of ordinary skill in the art to provide a step of adjusting gradation levels in response to a comparison of metrics with metric criteria, as disclosed in Yang et al., in the method disclosed in Anderson et al.

Regarding claim 4, Yang et al. disclose shifting and scaling of collected pixel values (shifting illustrated by comparison of Figs. 8 and 9, scaling illustrated by comparison of Figs. 9 and 10; read column 6, lines 19-65). This method, as opposed to the prior art, improves contrast in a printed image (column 1, line 66 – column 2, line 41; column 2, line 49 – column 3, line 18), and thus it would have been obvious for one of ordinary skill in the art to provide a step of shifting and scaling of collected pixel values, as disclosed in Yang et al., in the method disclosed in Anderson et al.

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Regarding claim 5, neither Anderson et al. nor Yang et al. appear to disclose printing and collection of pixel values simultaneously. However, simultaneous printing of image data and collection of the printed data for analysis, is a well-known parallel-processing procedure designed to increase the speed, and thus the efficiency, of the imaging process, and thus it would have been obvious for one of ordinary skill in the art to implement this feature in the combined teaching of Anderson et al. and Yang et al.

Claims 11, 12 and 14-17 are apparatus claims corresponding to above-rejected method claims 1-6. The combined teaching of Anderson et al. and Yang et al. discloses or renders obvious the limitations recited in these claims, as set forth above.

Regarding claim 13, the apparatus disclosed in Anderson et al. further comprises storage for storing the collected pixel values (column 2, lines 21-22).

6. Claims 7, 8, 10, 18, 19 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. in view of Yang et al. as applied to claims 1 and 11 above, and further in view of U.S. Publication US 2001/0036314 A1 (Yamaguchi et al.).

Regarding claims 7, 8 and 10, Anderson et al. in view of Yang et al. does not disclose a method wherein the applied metric criterion is bimodal symmetry where median of the pixel values equals mean of the pixel values, further comprising a step of adjusting print density based on the bimodal symmetry point as 50% of visual dark threshold, or wherein the metric criterion is relative height of a dark modal peak to that of a light modal peak to determine degree of adjustment of the print density. These limitations are disclosed in Yamaguchi et al. (for text, an intermediate value of detected black and white peak values yielding a 50:50 ratio is designated as an optimal

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binarization threshold level (paragraphs [0053], [0055], [0057]; determination of optimal threshold level based on relationship of white and black peak frequencies (paragraphs [0049] – [0053]). By altering the threshold value in such a manner, information specific to an original may be reproduced with high fidelity, compared with the prior art (paragraphs [0011], [0012]). Therefore, it would have been obvious for one of ordinary skill in the art to modify the combined teaching of Anderson et al. and Yang et al., by providing a step of modifying a binarization threshold to ensure bimodal symmetry, such as disclosed in Yamaguchi et al.

Claims 18, 19 and 21 are apparatus claims corresponding to above-rejected method claims 7, 8 and 10. The combined teaching of Anderson et al., Yang et al. and Yamaguchi et al. discloses or renders obvious the limitations recited in these claims, as set forth above.

7. Claims 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. in view of Yang et al. as applied to claims 1 and 11 above, and further in view of U.S. Patent 4,656,665 (Pennebaker).

Regarding claim 9, Anderson et al. in view of Yang et al. does not disclose a step of adjusting print density to a visual dark threshold determined as a median of the pixel values when a single dark mode remains in the histogram. This limitation is disclosed in Pennebaker (threshold values for adjusting density values based on a determination of a median of pixels in a single mode (Fig. 1; column 2, line 58 – column 3, line 61); the mode may be light or dark according to the color of the background). Providing an adjustable threshold value in this manner is computationally simple and is not

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significantly influenced by peculiar spikes and valleys in the histogram (column 4, lines 4-8), and thus it would have been obvious for one of ordinary skill in the art to modify the combined teaching of Anderson et al. and Yang et al. by providing for adjustment of print densities as disclosed in Pennebaker.


Claim 20 is an apparatus claim corresponding to above-rejected method claim 9. The combined teaching of Anderson et al., Yang et al. and Pennebaker discloses or renders obvious the limitations recited in this claim, as set forth above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (703) 305-4870. The examiner can normally be reached on Monday-Friday (7:30-5:00), alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (703) 308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thomas D. Lee
Primary Examiner
Art Unit 2624

tdl
November 10, 2004